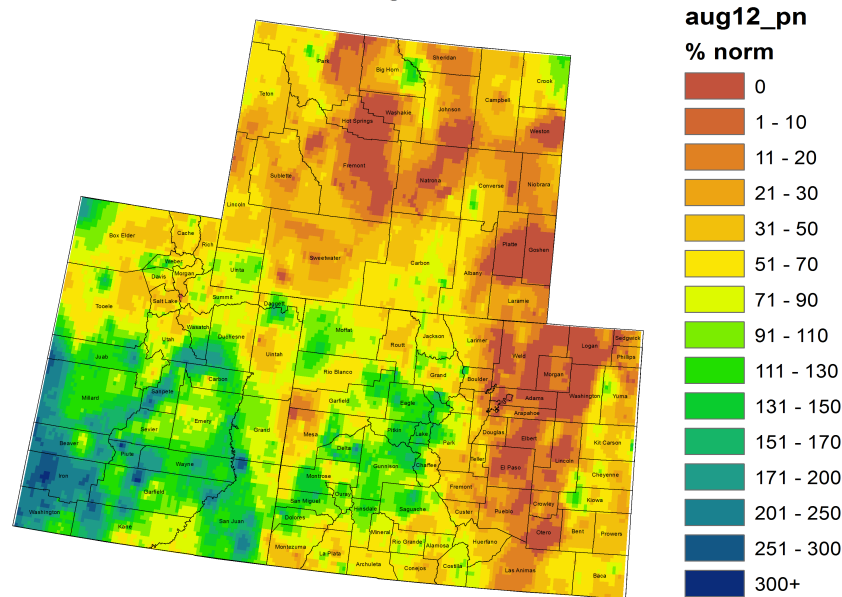


# NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

September 4, 2012

Colorado, Utah and Wyoming August 2012 Precipitation as Percentage of Normal



Snotel Water Year Precipitation Percentile Ranking for 4 September 2012 (Stations with 15+ years of data only)

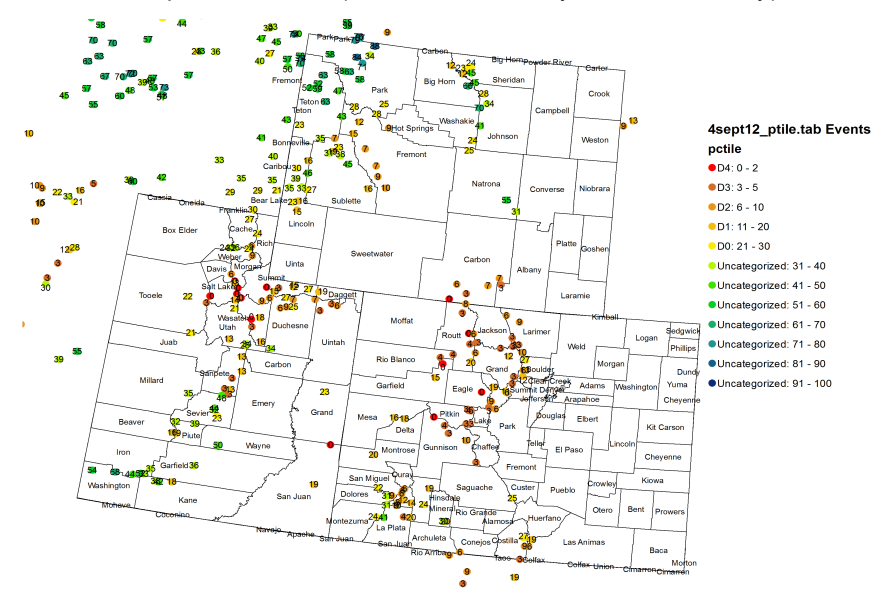


Fig. 1: August precipitation as a percent of average.

Fig. 2: SNOTEL WYTD precipitation percentiles (50% is median, 21 - 30% is Drought Monitor D0 category).

## Precipitation

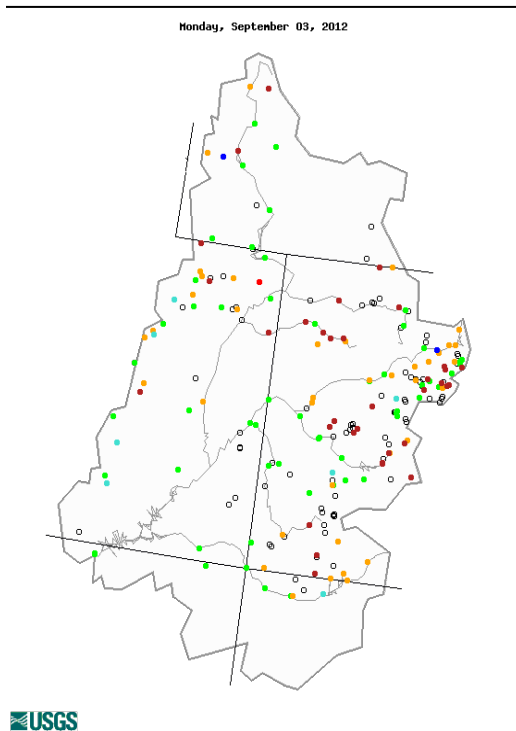
For the month of August, precipitation was concentrated around the central mountains of Colorado and in southeast Utah in the Upper Colorado River Basin (UCRB, Fig 1). The central CO mountains received near normal precipitation for the month, while southeast UT received between 90% to almost 200% of average precipitation. The northern part of the UCRB was drier, with most areas receiving less than 90% of average precipitation. East of the basin, the Front Range and eastern CO were drier, receiving between 30% and 70% of average with many areas in northeast CO seeing 0% of their average monthly precipitation.

Water-year-to-date (WYTD), SNOTEL precipitation percentiles are low for the Yampa and Gunnison basins in CO, and the Wasatch range in UT, with many sites reporting in the lowest 10<sup>th</sup> percentile or below (Fig. 2). The northern mountains of CO are also dry, with most sites reporting precipitation percentiles in the teens and single digits. SNOTEL percentiles in the Upper Green basin in WY are around the 20<sup>th</sup> to 30<sup>th</sup> percentiles, and percentiles in the San Juan basin are in the teens and 20s.

# Streamflow

As of September 2<sup>nd</sup>, about 47% of the USGS streamgages in the UCRB recorded normal (25<sup>th</sup> – 75<sup>th</sup> percentile) or above normal 7-day average streamflows (Fig. 3). About 5% of the gages in the UCRB are recording above normal flows, while about 26% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows. The Yampa-White Basin is still recording in the moderate hydrologic drought category (below the 10<sup>th</sup> percentile), and the Upper San Juan River, the lower Green River and the Colorado Headwaters are mainly in the below normal category for streamflow.

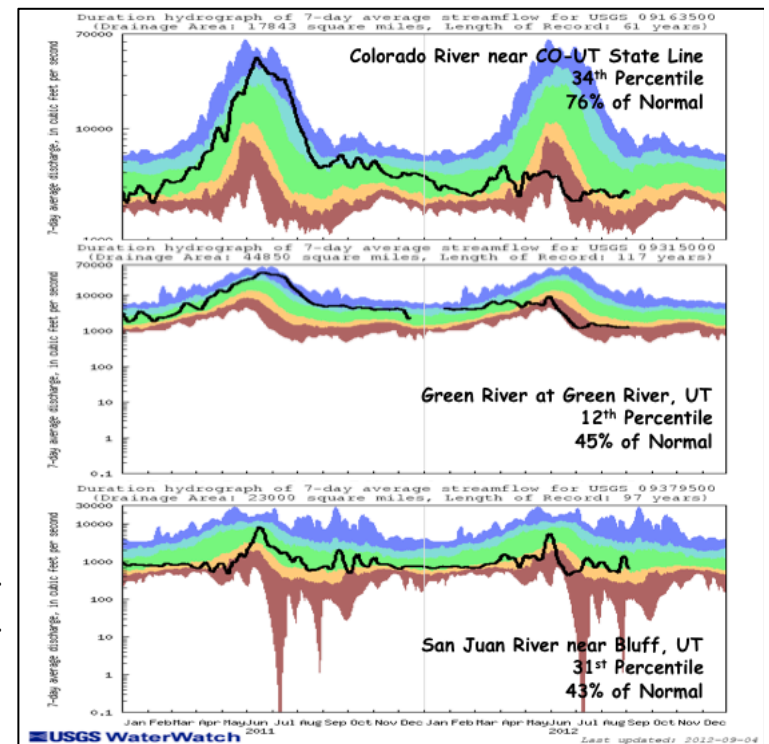
Flows on two of the three key gages around the basin are in the near normal range, while one is in the below normal range (Fig. 4). The Colorado River near the CO-UT state line and the San Juan River near Bluff, UT are in the low end of the near normal range, reporting at the 34<sup>th</sup> and 31<sup>st</sup> percentiles, respectively. Flows on the Green River at Green River, UT continued to increase slightly to the 12<sup>th</sup> percentile (though still at the low end of the below normal range).



Explanation - Percentile classes							
<span style="color: red;">●</span>	<span style="color: darkred;">●</span>	<span style="color: orange;">●</span>	<span style="color: green;">●</span>	<span style="color: lightblue;">●</span>	<span style="color: darkblue;">●</span>	<span style="color: black;">●</span>	<span style="color: white;">○</span>
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Fig. 3: 7-day average discharge compared to historical discharge for September 3<sup>rd</sup>.

Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).



## Water Supply and Demand

For the month of August, temperatures were above average for all the of UCRB and eastern CO, with anomalies ranging from 1 to 5 degrees above normal. Last week, the warm anomalies continued, with the UCRB seeing temperatures 3 to 6 degrees above average and northeast CO seeing temperatures 6 to 12 degrees above average. Satellite vegetation conditions show the driest vegetation over northeast UT, with dry conditions extending into western CO and southern WY (Fig. 5). Very dry vegetation is also showing up over northeast CO and along the Arkansas valley in southeast CO. Reference ET rates are still higher than average across the basin though not above the record. East of the basin, most of the reference ET sites are recording record high years, with daily ET rates between .20 to .30 inches (Fig. 6).

Last month, all the major reservoirs in the UCRB saw storage volume decreases, which is expected during the demand season. Most of the reservoirs experienced larger decreases than what is normal for this time of year with McPhee seeing a 12.3% decrease and Green Mountain seeing a 10.4% decrease. Flaming Gorge saw the smallest decrease, with storage volumes falling only 1%, which is average for that reservoir this time of year. All of the reservoirs are below their September averages, with most between 70% and 90% of average. Green Mountain is at 64% of average, Blue Mesa is at 60% of average, and Lake Powell is at 71% of average.

## Precipitation Forecast

A persistent upper level ridge of high pressure will continue to dominate the weather pattern over the UCRB throughout the work week. The mostly benign conditions brought about by this ridge will be interrupted by a few weak cold fronts expected to pass through the basin on Wednesday and then again on Friday. Enough moisture may be available to fuel weak showers over the highest terrain of the basin, however extremely dry low levels will continue to prevent any measurable precipitation from reaching valley locations. By Sunday a trough approaching the west coast will begin to pump Pacific moisture northward into the UCRB. Expect to see an uptick in convection beginning in the Four Corners region and gradually spreading northward moving into early next week. The best chances of precipitation will be in the southern regions where isolated liquid accumulations of up 0.50 inches will be possible through Sunday, with other areas generally receiving less than 0.25 inches.

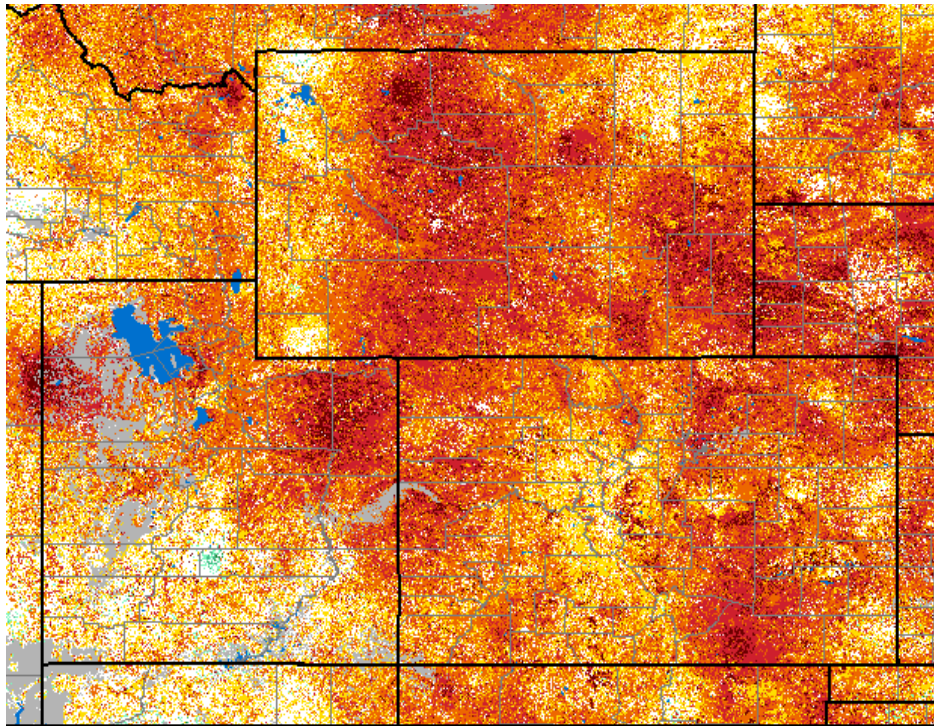


Fig. 5: eMODIS VegDRI satellite vegetation conditions as of September 2<sup>nd</sup>.

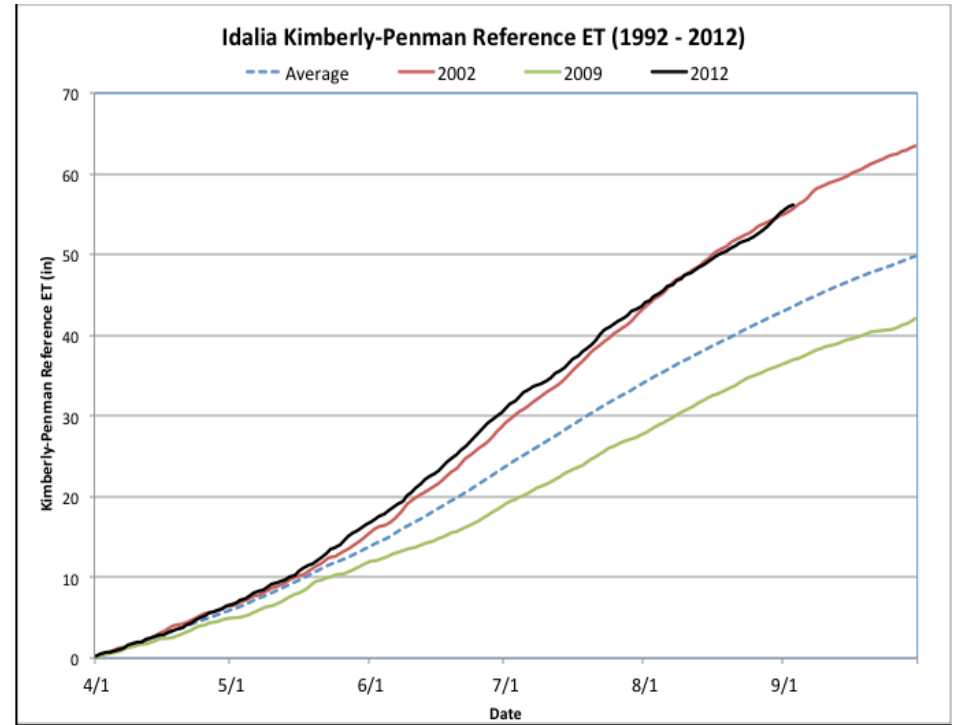


Fig. 6: Accumulated reference ET (black line) at Idalia in eastern CO, compared to the max year (red), min year (green), and average (dashed line).

# Drought and Water Discussion

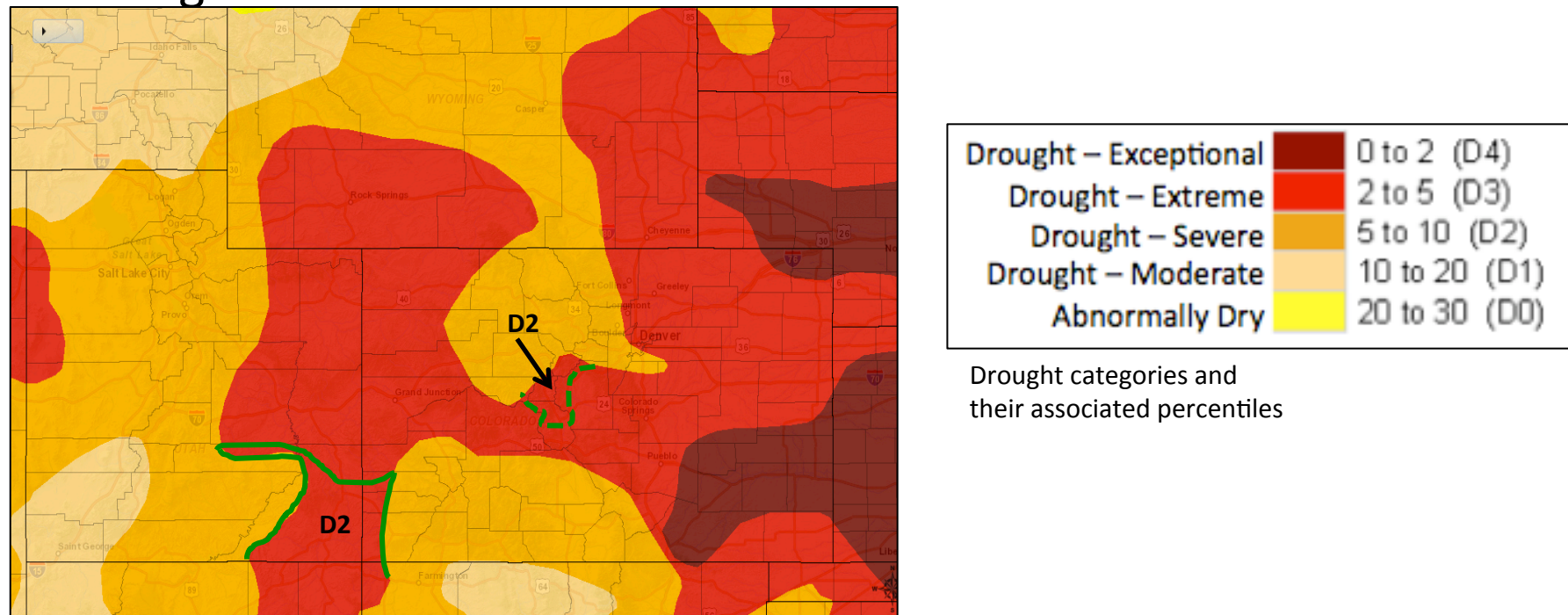


Fig. 7: August 28<sup>th</sup> release of U.S. Drought Monitor for the UCRB.

Drought categories and  
their associated percentiles

**Four Corners:** Some improvements are recommended for the Four Corners region (Fig. 7, green solid line). Standardized precipitation indices (SPIs) in the region are positive on shorter time scales and at longer time scales don't really get below -1.5. VegDRI and VIC soil moisture have also shown a little improvement in the area, and they are benefiting from fairly regular storms, even in valley locations. D2 is recommended around the border, with the D3 staying where VegDRI still looks poor and SPIs become more negative. We defer to the USDM author and local experts on how to resolve this improvement in northeast AZ and northwest NM.

**Central CO Mountains:** A slight improvement is also recommended for the central mountains of CO where decent rainfall has accumulated over the last month (Fig. 7, green dashed line). D3 should be completely eliminated from Summit and Lake counties where SPIs are most negative at the 120 day timescale (at -1.5). This improvement will also cover part of Park County and Chaffee County (just south of Buena Vista).